Amendment to the Claims:

1-14. (Cancelled)

15.   (Currently amended)   In a computer, a method of automatically determining a favorable neuro-stimulation program for a patient, comprising:

applying an electrical stimulus having a plurality of stimulus parameters to a selected configuration of the therapy electrodes that have been installed at a target therapy site of a patient;

sensing a response to the applied electrical stimulus at a sensing device that has been installed at a sense location of the patient;

determining whether the response is within a desired range or an improvement over a previous sensed response from a different electrical stimulus and/or a different configuration of therapy electrodes;

selecting an alternate configuration of therapy electrodes and/or an alternate electrical stimulus;

repeating the applying, sensing, and determining and selecting procedures using the alternate configuration of therapy electrodes and/or the alternate electrical stimulus; and

choosing a configuration of therapy electrodes and/or an electrical stimulus corresponding to a sensed response that is within a desired range and/or provides a better result compared to other sensed responses.

16.   (Original) The method of claim 15 wherein the selecting procedure comprises computing an alternate stimulus parameter while maintaining a constant electrode configuration, and wherein computing the alternate stimulus parameter comprises correlating a plurality of different stimuli applied to the constant electrode configuration with corresponding sensed responses to determine a stimulus/response trend and estimating a new stimulus parameter that is expected to improve the efficacy according to the stimulus/response trend.

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17.   (Original) The method of claim 15 wherein the selecting procedure comprises computing an alternate electrode configuration while maintaining constant stimulus parameters, and wherein computing the alternate electrode configuration comprises correlating a plurality of sensed responses with corresponding electrode configurations to which the constant stimulus parameters were applied to determine an electrode-configuration/response trend and estimating a new electrode configuration that is expected to improve the efficacy according to the electrode-configuration/response trend.

18.   (Original) The method of claim 15 wherein the selecting procedure comprises increasing a stimulus parameter when a stimulus/response trend indicates that an increase in the stimulus parameter improves the efficacy of the stimulus.

19.   (Original) The method of claim 15 wherein the selecting procedure comprises decreasing a stimulus parameter when a stimulus/response trend indicates that a decrease in the stimulus parameter improves the efficacy of the stimulus.

20.   (Original) The method of claim 15 wherein the applying, sensing, determining, selecting, repeating and choosing procedures are repeated on the same patient within a period not greater than one week.

21.   (Original) The method of claim 15 wherein the applying, sensing, determining, selecting, repeating and choosing procedures are repeated on the same patient on consecutive days.

22.   (Original) The method of claim 15 wherein the applying, sensing, determining and selecting procedures are completed in a time period not greater than approximately 300 seconds.

23.   (Original) The method of claim 15 wherein two iterations of the applying, sensing, determining and selecting procedures are repeated in a time period not greater than approximately 90 seconds.

24.   (Original) The method of claim 15 wherein two iterations of the applying, sensing, determining and selecting procedures are repeated in a time period not greater than approximately 180 seconds.

25.   (Original) The method of claim 15 wherein two iterations of the applying, sensing, determining and selecting procedures are repeated in a time period of approximately 20-90 seconds.

26.   (Original) The method of claim 15 wherein a single iteration of the applying, sensing, determining and selecting procedures is completed in a time period not greater than approximately 45 seconds.

27.   (Original) The method of claim 15 wherein a single iteration of the applying, sensing, determining and selecting procedures is completed in a time period of approximately 10-30 seconds.

28.   (Original) The method of claim 15 wherein the sensing procedure comprises attaching EMG sensors to a sense site of the patient, detecting peripheral responses to the stimuli applied to the electrodes, and automatically sending the detected peripheral responses to the controller.

29.   (Original) The method of claim 15 wherein the sensing procedure comprises detecting data related to neural activity using a functional MRI and automatically sending the data to the controller.

30.   (Original) The method of claim 15 wherein the data comprises coordinates of neural activity relative to the therapy electrodes.

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31.   (Original) The method of claim 15 wherein the data comprises intensity levels of neuralactivity.

32-49. (Cancelled)

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